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ELECTRONIC TRANSFER OF INFORMATION AND ITS IMPACT ON AEROSPACE AND DEFENCE RESEARCH AND DEVELOPMENT

NORTH ATLANTIC TREATY ORGANIZATION

THE WEAPONS LABORATORY TECHNICAL LIBRARY: AUTOMATING WITH "STILAS"

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SUMMARY

In 1983, the United States Air Force Weapons Laboratory Technical Library formally recognized the requirement to manage its large diversified collections by automating several functions. This awareness coincided with the initiation of a joint Library of Congress-Defense Technical Information Center procureement program for an advanced automated library system to serve the sophisticated needs of Department of Defense scientific libraries. Prototypes for the DTIC-sponsored project were described in the literature as the "Local Automation Model." The Weapons Laboratory agreed to install the first production version of the system that was renamed the Scientific and Technical Information Library Automated System (STILAS). STILAS incorporates the features of an integrated library system with gateway reference access to an assortment of remote data bases, allowing library staff members and end-users to access up to four data base systems simultaneously. In addition to this reference function, STILAS performs all of the traditional library management functions of circulation, serials control, acquisitions, and inventory control. STILAS access is provided to Kirtland Air Force Base and its tenant organizations.

SYSTEM DEVELOPMENT

In 1981, as part of an effort to maintain currency with library technology and increase access to technical documentation, the Defense Technical Information Center (DTIC) initiated a program known as the "Local Automation Model" or "LAM." The intent of the LAM project was to develop a prototype integrated automated system to be used by Department of Defense (DOD) libraries and information centers. The system envisioned would allow for increased access to the rapidly expanding government and contractor-produced technical literature. While providing greater access for research purposes, the system would also encourage wider participation in DTIC's Shared Bibliographic Input Network SBIN). The SBIN program, originally designed to facilitate growth of the DTIC on-line data base, had been suffering from a lack of participation due to the redundancy of enter-

ing cataloging records for local publications in a local catalog as well as into the DTIC system. (Hamilton, 1983.)

The desire to eliminate duplicate effort in loading records in two separate systems was widespread among DOD libraries which participated in a 1981 DTIC survey and needs analysis. Other concerns expressed were the need for complete automation of all library functions and enhanced capabilities for uploading and downloading records from the DTIC Defense R&D On-Line System (DROLS). The Weapons Laboratory (WL) Technical Library was among the respondents seeking integrated in-house automation of its many functions.

Our 1983 decision to automate coincided with the development of the functional specifications for the LAM prototype. As refinement of the specifications progressed, DTIC was joined by the Library of Congress (LC) in its effort to develop a system suitable for use in federal libraries. The joint effort by DTIC and LC focused on an effort to combine off-the-shelf hardware and software which would meet the prototype requirements. (Hamilton, Sept. 1984.) A key factor in doing so was the development of a single library system which could be sized (small, medium, and large) to meet the varying needs of federal libraries and information centers. In a study of the most acceptable library systems available, two versions of the LAM prototype were tested in early 1986. The small version, MicroLAM, was tested at the Army Training and Doctrine Command Headquarters, Fort Monroe, Virginia, while the full-scale large system configuration was tested at the Defense Nuclear Agency in Virginia. Prototype testing analyzed the ability of the system to handle the three primary types of library data, bibliographic, patron, and fiscal, in performing the core library functions of acquisitions, cataloging, circulation management and control, and reference.

The LAM prototype tests resulted in the release of a competitive Request for Proposal (RFP) from LC in September 1987. The RFP called for the production of an integrated library system meeting the specifications derived from the prototype experience. Copies of the RFP were issued to over one hundred vendors. A panel of federal librarians and computer experts selected three vendors to perform operational capability demonstrations (OCD) of their products in the spring of 1988. Of those conducting the OCDs, SIRSI Corporation of Huntsville, Alabama passed with flying colors. As a result of the panel recommendations, LC awarded a production contract to SIRSI in September 1988. Renamed the "Scientific and Technical Information Library Automation System" or "STILAS," SIRSI offered the production version of the DTIC-LC developed system for purchase on LC contract J70065. The WL Technical Library agreed to acquire the first production version of the system and sent the necessary funding documents/task order for a large version of the system to LC in October 1988.

A small business specializing in library automation, SIRSI was founded in 1979 by library and computer specialists, and has a strong reputation based upon the success of their UNIX-based Unicorn Collection Management System. SIRSI offers a complete support package for their systems, including pre-installation site analysis, data preparation and loading, tailored system configuration, 24-hour telephone hotline support, system upgrading, and special supplies and equipment, including barcode labels and scanners.

STILAS FEATURES

STILAS is a turnkey system based on the Unicorn and BRS/ Search systems. The contracted STILAS package includes UNISYS hardware, software written in the C language running on the UNIX 5.3 operating system, full system installation and support, and a comprehensive training package. The large configuration ordered by WL features sixteen workstations linked to a UNISYS 5000/95 supermini computer. Not merely terminals, each of the workstations is a powerful personal computer (PC). The PCs actually preprocess operator commands before they reach the host computer, thus increasing system speed and versatility.

STILAS offers an integrated data base built around the library catalog. It is an easy system for both library staff members and patrons to learn and use. Color-coded engraved function keys are used to enter commands in a verb-noun format. Context driven customized help screens also simplify use. The intelligent PC workstations allow for alternative means for completing single functions, permitting idiosyncratic work patterns. Screen formats are tailored to various library work areas. The modular structure of STILAS is not unlike that of the integrated library systems which have been available for the past several years. STILAS is unique, however, in that it is specifically designed for science and technology libraries. The distinction lies in the fact that it is far more than an integrated system, and is actually an "open" system which permits end-users to perform much of their own searching across a spectrum of remote data bases while simultaneously searching local library files.

The public catalog module permits full text searching using BRS based commands to search for keywords in any record field with Boolean operators, truncation and positional features. Additionally, novice and expert search modes are supported with imbedded help features. Local catalog searching provides the status of all materials, whether on order or in the library collection, with records displayed in a variety of abbreviated and full formats. Closely linked with the catalog module is the circulation control module. It features a mechanism for validating security clearance levels for both library materials and patrons before the materials are circulated. Akin to this feature is the printing of receipts for patron signature whenever classified materials are circulated. Standard circulation functions of producing item holds, recalls, overdue notices, and statistics as

well as mailing labels for interlibrary loan (ILL) items are also provided.

The most unique aspect of STILAS, and the one distinguishing it as an "open" system, is its capacity to serve as a "gateway" to multiple data bases on remote computer systems. While computer networking provides a communications link between various automated systems, gateway technology facilitates networking by masking the incompatibilities of the various systems. (Jacobson, 1986.) The STILAS gateway permits simultaneous interaction over a variety of links with data bases such as DTIC, DIALOG, BRS, or NASA Recon, while also searching the local files. All communications protocols are stored within the STILAS system, allowing searchers to link with remote systems through auto dial/auto log-in direct modems which are connected to the host computer. These multiple links allow users, whether library staff members or patrons/end-users, to access remote data bases in either of two modes. In the native mode, users have full access to each data base system individually, employing the command language/structure peculiar to that system. While in the native mode, users have the option to capture search results or to switch to the universal access mode at any time during their search. The universal access mode permits searching in up to four systems simultaneously using a universal command language. Each search statement must be formulated only once; STILAS will translate the statement into the appropriate forms for each data base being searched. The universal mode permits all common search features of varying display formats, sorting, data capture/downloading, and postsearch processing.

The universal access mode is made possible by the Retrieval Interface Manager (RIM), which is unique to STILAS. RIM provides the universal interface to disparate data bases by providing STILAS users with a common command language for searching. Essentially, RIM is a translator, converting STILAS commands in a format based upon BRS/Search, into the formats required for other systems. RIM performs this function not only for searching but also for data entry and modification (uploading), data capture (downloading), and reporting. Additionally, both uploading and downloading may be performed as a background function while the the user is conducting other transactions on the system. Data formats are translated into a single STILAS format so that search results are uniform in appearance, easing user evaluation of the results. RIM also facilitates searches by storing session histories, permitting the reexecution of searches, and by allowing the modification of stored searches. The downloading and universal format options available via RIM provide the capability of preparing customized, merged bibliographies extracted from multiple data bases. Another STILAS advantage, due to RIM's versatility, is that training time required to learn the peculiarities of multiple data base systems is significantly reduced. Users need only learn STILAS. Also, locally significant or frequently required research files can be maintained as STILAS searches for quick execution when needed. Simultaneous uploading into multi-

ple files is also possible with RIM. This feature fulfills one of the original DTIC desires of providing an easy mechanism for increasing SBIN participation by eliminating duplicate record entry. STILAS uploading also permits entry of work unit records into the local catalog, facilitating internal tracking of local report production/publication.

While the gateway reference functions made possible by RIM are the most distinctive features of STILAS, the other library functions of acquisitions, cataloging, serials control, and academic reserves are all modules of the system. Within the acquisitions module, complete tracking of desired materials is possible through all stages of selection, ordering, claiming, receiving, and processing. Full fund accounting information is maintained by STILAS, with options for producing purchase orders and automatic claims to vendors. A variety of statistical and financial reports can be prepared at any stage of the acquisitions process. During this process, item status is continually available in the public catalog. Also, a useful feature is that of building a vendor file, storing data on funds expended with a particular vendor, claim histories, and multiple vendor contacts and addresses.

The STILAS cataloging module accepts downloading of records in a variety of formats (Committee on Scientific and Technical Information [COSATI], On-Line Computer Library Center [OCLC], other Machine-Readable Cataloging [MARC], etc.), either on-line or from archival tapes or Compact Disc-Read Only Memory (CD-ROM), into the local data base. Original cataloging, for local and uploading purposes, is facilitated by the use of templates or workforms employing default values for locally specified fields. Data is validated for both uploading and downloading transactions. Multiple authority files may be built for any fields which the local situation requires. The authority files, author, subject, or series, can be searched or browsed on-line during the cataloging and catalog maintenance transactions. The authority files of systems such as OCLC may also be searched during the cataloging process via the RIM interface. The cataloging records built form the basis for item records representing additional copies and volumes held.

Multiple item records built upon a single cataloging record are the cornerstone of the serials control module in STILAS. All holdings are displayed in the public catalog for both hardcopy and microform materials. Missing issues are automatically claimed. Claiming information as well as next issue expected delivery dates are displayed to users. As each has a unique item record in STILAS, all issues of all titles may circulate, as local policies allow. The optional academic reserves module also displays information to all users regarding the nonavailability of certain materials for routine circulation. This module includes all the controls of the circulation management module,

with the addition of printed reserve lists for easy reference. As with all other STILAS modules, complete, locally customized statistical reports are available.

To complete the STILAS package, SIRSI provides full support of STILAS with upgrades loaded directly into the local system via a dedicated telephone link. This link is also maintained for troubleshooting system problems and conducting routine system maintenance and analysis.

LOCAL CONSIDERATIONS

The WL Technical Library installation of STILAS required some modification of the existing space in the Technical Processing Section to house the hardware. The UNISYS 5000/95 is acknowledged to be a system needing minimal "babysitting" in a typical office or library environment. To complete the WL installation, however, a heavy duty air conditioner and an uninterruptable power supply (UPS) were both added to the existing room. Extra electrical circuits and 24 telephone lines were installed to accommodate the gateway links and off-site user dial-in. These renovations coincided with those required to install a magnetic strip activated book security system in the Library. The project to apply the security strips was conducted in conjuction with that of applying barcode labels to all materials in preparation for automated circulation with STILAS. This effort, requiring the physical handling of every item in the Library's collection also permitted a full inventory. The inventory was a valuable means of verifying that all titles were loaded into the system from the first batch of archival tapes. Such inventories, as well as usage studies will be conducted much more efficiently in the future using the barcode labels and portable laser scanners.

Future expanded use of STILAS in the Technical Library will necessitate refinement of some present policies and procedures. Factors relating to operations security, computer security, and communications security require further analysis. In particular, the adoption of the Low-cost Encryption and Authentication Device (LEAD) is expected to have a considerable impact on system use and operation. Other concerns may involve Privacy Act issues as related to patron identification stored in the system and the possibility of user fees to recoup some of the communications costs incurred via the gateway features. The cost of system use will be of special interest as more and more patrons will be able to perform searches from their offices using STILAS. They will be able to connect to remote data bases through the STILAS host via the Weapons Laboratory's Local Area Network (LAN) without ever having to visit the Library. At present, there is no accurate means of predicting the amount of "dial-in" usage of the system. Perhaps several years will have to elapse to fully evaluate the levels of system use by various segments of the patron population accessing STILAS by the many available means.

CONCLUSION

The Technical Library's implementation of STILAS is an important milestone in an ongoing program. It completes the developmental phase of a sophisticated library system designed to meet the research needs of federal scientific and technical facilities in the United States. Successful installation of STILAS at the Weapons Laboratory marks the beginning of a new period of strengthening the federal library network. Libraries acquiring STILAS will be able to easily search each others' systems as a means of accessing and sharing unique resources. (Cotter and Hartt, 1986.) The future beyond STILAS-linked libraries is even brighter. STILAS may become the foundation of the NATO Scientific and Technical Information Service (NSTIS) proposed in 1986. (Molholm, 1987.) In any event, STILAS has found a home in the Weapons Laboratory, where it has revolutionized every facet of Technical Library operations.

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